

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

Date of mailing: 23 November 2000 (23.11.00)	From the INTERNATIONAL BUREAU To: Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE in its capacity as elected Office
International application No.: PCT/EP00/02782	Applicant's or agent's file reference: O.Z. 5449-WO
International filing date: 30 March 2000 (30.03.00)	Priority date: 12 May 1999 (12.05.99)
Applicant: OTTERS BACH, Peter et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International preliminary Examining Authority on:

08 September 2000 (08.09.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

**NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year)
23 November 2000 (23.11.00)

From the INTERNATIONAL BUREAU							
To:	S		I		Z.K.		z.G.
CREAVIS GESELLSCHAFT TECHNOLOGIE UND INNOVATION	S		I		MBH		SB
Patente - Marken Bau 1042 - PB 15 D-45764 Marl ALLEMAGNE	N	R	DEGUSSA-HÜLS PATENTE & MARKEN Standort Marl EM/01/WZ/A				B
	Kor	L					No
	Schr	Ra					Abl
	EV	PSS	30. NOV. 2000				AU
			Termin:				→ HU

Applicant's or agent's file reference

23 November 2000 (23.11.00)

Applicant's or agent's file reference

O.Z. 5449-WO

IMPORTANT NOTICE

International application No. PCT/EP00/02782	International filing date (day/month/year) 30 March 2000 (30.03.00)	Priority date (day/month/year) 12 May 1999 (12.05.99)
Applicant CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND INNOVATION MBH et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
BR,CA,CN,EP,IL,JP,NO,NZ,PL,RU

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 23 November 2000 (23.11.00) under No. WO 00/69935

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>J. Zahra</p> <p>Telephone No. (41-22) 338.83.38</p>
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INTERNATIONAL SEARCH REPORT

Inte
al Application No
PCT 00/02782

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08F220/34 A01N33/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 204 312 A (E.I. DU PONT DE NEMOURS AND CO.) 10 December 1986 (1986-12-10) claims 1,4	1-11
A	DE 196 46 965 A (RÖHM GMBH) 4 June 1998 (1998-06-04)	
A	EP 0 862 859 A (HÜLS AG) 9 September 1998 (1998-09-09) cited in the application claim 1	1
A	WO 91 12282 A (H.B. FULLER LICENSING & FINANCING INC.) 22 August 1991 (1991-08-22)	

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 July 2000	02/08/2000
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016	Authorized officer Cauwenberg, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/02782

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 204312	A 10-12-1986	US 4708870 A		24-11-1987
		AU 584427 B		25-05-1989
		AU 5809286 A		11-12-1986
		BR 8602524 A		27-01-1987
		CA 1271893 A		17-07-1990
		DE 3673244 D		13-09-1990
		DK 258486 A		04-12-1986
		IL 78979 A		29-04-1990
		IN 166373 A		21-04-1990
		JP 61282304 A		12-12-1986
		NO 862189 A		04-12-1986
		NZ 216359 A		29-08-1989
DE 19646965	A 04-06-1998	DE 19654897 A		04-06-1998
		AU 5051498 A		03-06-1998
		WO 9821253 A		22-05-1998
		EP 0938511 A		01-09-1999
EP 862859	A 09-09-1998	DE 19709076 A		10-09-1998
		CA 2231120 A		06-09-1998
		JP 10251340 A		22-09-1998
		NO 980980 A		07-09-1998
WO 9112282	A 22-08-1991	NONE		

REPLACED BY
ART 34 AMEND

THE FOLLOWING IS THE ENGLISH TRANSLATION OF THE
ANNEXES TO THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT UNDER PCT ARTICLE 34:
AMENDED SHEETS (pages 2, 7, 15 and 16)

substances with antimicrobial action into a matrix.

Tert-butyldiminoethyl methacrylate is a commercially available monomer in methacrylate chemistry and is used in particular as a hydrophilic constituent 5 in copolymerizations. For example, EP 0 290 676 uses various polyacrylates and polymethacrylates as a matrix for immobilizing bactericidal quaternary ammonium compounds.

In another technical sector US-A 4 532 269 discloses a terpolymer of butyl 10 methacrylate, tributyltin methacrylate and tert-butyldiminoethyl methacrylate. This polymer is used as an antimicrobial paint for ships: the hydrophilic tert-butyldiminoethyl methacrylate promotes gradual erosion of the polymer, thus liberating the highly toxic tributyltin methacrylate as antimicrobial agent.

15 In these applications the copolymer prepared using aminomethacrylates is merely a matrix or carrier substance for added microbicidal agents which can diffuse or migrate out of the carrier substance. Sooner or later polymers of this type lose their effectiveness once the necessary "minimal inhibitory concentration" (MIC) is no longer achieved on the surface.

20 European Patent Applications 0 862 858 and 0 862 859 have disclosed that homo- and copolymers of tert-butyldiminoethyl methacrylate, a methacrylate having a secondary amino function, have inherent microbicidal properties. To avoid undesirable resistance phenomena in the microbes, particularly bearing 25 in mind the development of resistance by bacteria known from antibiotics research, systems developed in the future will also have to be based on novel compositions with improved effectiveness.

The object of the present invention is therefore to develop novel polymers 30 having antimicrobial action. These, where appropriate in the form of a coating, should prevent the establishment and spread of bacteria on surfaces.

Surprisingly, it has now been found that polymerizing aliphatically unsaturated monomers which have been at least singly functionalized by

radiation. For example, the radiation from a UV excimer of wavelengths from 250 to 500 nm, preferably from 290 to 320 nm, is very suitable. Mercury vapor lamps are also suitable here as long as they emit substantial proportions of radiation in the abovementioned ranges. The exposure times are generally 5 from 10 seconds to 30 minutes, preferably from 2 to 15 minutes.

A graft polymerization may also be achieved by a process described in European Patent Application 0 872 512, based on a graft polymerization of monomer molecules and initiator molecules incorporated by a swelling 10 process.

Other aliphatically unsaturated monomers may be used in the novel process besides the monomers functionalized by means of a tertiary amino group. For example, the monomer mixture used may comprise an aliphatically 15 unsaturated monomer at least singly functionalized by means of a tertiary amino group together with acrylates or methacrylates, e.g. acrylic acid, tert-butyl methacrylate or methyl methacrylate, styrene, vinyl chloride, vinyl ethers, acrylamides, acrylonitriles, olefins (ethylene, propylene, butylene, isobutylene), allyl compounds, vinyl ketones, vinylacetic acid, vinyl acetates 20 or vinyl esters.

The antimicrobial polymers prepared by the novel process from aliphatically unsaturated monomers which have been at least singly functionalized by means of a tertiary amino group exhibit microbicidal or antimicrobial behavior 25 even without grafting onto a substrate surface.

If the novel process is used directly on the substrate surface without grafting, conventional free-radical initiators may be used. Examples of initiators which may be used are azonitriles, alkyl peroxides, hydroperoxides, acyl peroxides, 30 peroxoketones, peresters, peroxocarbonates, peroxodisulfate, persulfate and any of the usual photoinitiators, such as acetophenones, α -hydroxyketones, dimethylketals and benzophenone. The polymerization may also be initiated thermally or, as already stated, by electromagnetic radiation, such as UV light or γ -radiation.

What is claimed is:

1. A process for preparing antimicrobial polymers,
which comprises
5 polymerizing aliphatically unsaturated monomers which have been at least singly functionalized by means of a tertiary amino group.
2. The process as claimed in claim 1,
wherein
10 use is made of aliphatic unsaturated monomers functionalized by means of a tertiary amino group and having the general formula
$$R^1NR^2R^3$$
15 where R^1 is a branched, unbranched or cyclic, saturated or unsaturated hydrocarbon radical having up to 50 carbon atoms which may have substitution by O atoms, N atoms or S atoms, and R^2 and R^3 are identical or different and are branched, unbranched or cyclic, saturated or unsaturated hydrocarbon radicals having up to 25 carbon atoms, which may have substitution by O atoms, N atoms or S atoms.
- 25 3. The process as claimed in one of claims 1 and 2,
wherein
the polymerization is carried out with other aliphatically unsaturated monomers.
- 30 4. The process as claimed in one of claims 1 to 3,
wherein
the polymerization is carried out on a substrate.
5. The process as claimed in one of claims 1 to 4,

wherein

the polymerization is carried out as a graft polymerization of a substrate.

5 6. The process as claimed in claim 5,

wherein

prior to the graft polymerization the substrate is activated by UV radiation, plasma treatment, corona treatment, flame treatment, ozonization, electrical discharge or γ -radiation.

10

7. The process as claimed in claim 5,

wherein

prior to graft polymerization the substrate is activated by UV radiation with a photosensitizer.

15

8. The use of antimicrobial polymers prepared as claimed in one of claims 1 to 7 for producing products with an antimicrobial coating of the polymer.

20 9.

The use of antimicrobial polymers prepared as claimed in one of claims 1 to 7 for producing items for medical technology with an antimicrobial coating of the polymer.

25

10. The use of antimicrobial polymers prepared as claimed in one of claims 1 to 7 for producing hygiene items with an antimicrobial coating of the polymer.

11. The use of antimicrobial polymers as claimed in one of claims 1 to 7 for producing surface coatings, protective paints or other coatings.

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**VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT
AUF DEM GEBIET DES PATENTWESENS**

PCT

INTERNATIONALER RECHERCHENBERICHT

(Artikel 18 sowie Regeln 43 und 44 PCT)

Aktenzeichen des Anmelders oder Anwalts O.Z. 5449-W0	WEITERES VORGEHEN	siehe Mitteilung über die Übermittlung des internationalen Recherchenberichts (Formblatt PCT/ISA/220) sowie, soweit zutreffend, nachstehender Punkt 5
Internationales Aktenzeichen PCT/EP 00/ 02782	Internationales Anmelde datum (Tag/Monat/Jahr) 30/03/2000	(Frühestes) Prioritätsdatum (Tag/Monat/Jahr) 12/05/1999
Anmelder CREAVIS GESELLSCHAFT ...		

Dieser internationale Recherchenbericht wurde von der Internationalen Recherchenbehörde erstellt und wird dem Anmelder gemäß Artikel 18 übermittelt. Eine Kopie wird dem Internationalen Büro übermittelt.

Dieser internationale Recherchenbericht umfaßt insgesamt 2 Blätter.

Darüber hinaus liegt ihm jeweils eine Kopie der in diesem Bericht genannten Unterlagen zum Stand der Technik bei.

1. Grundlage des Berichts

a. Hinsichtlich der **Sprache** ist die internationale Recherche auf der Grundlage der internationalen Anmeldung in der Sprache durchgeführt worden, in der sie eingereicht wurde, sofern unter diesem Punkt nichts anderes angegeben ist.

Die internationale Recherche ist auf der Grundlage einer bei der Behörde eingereichten Übersetzung der internationalen Anmeldung (Regel 23.1 b)) durchgeführt worden.

b. Hinsichtlich der in der internationalen Anmeldung offenbarten **Nucleotid- und/oder Aminosäuresequenz** ist die internationale Recherche auf der Grundlage des Sequenzprotokolls durchgeführt worden, das

in der internationalen Anmeldung in Schriftlicher Form enthalten ist.

zusammen mit der internationalen Anmeldung in computerlesbarer Form eingereicht worden ist.

bei der Behörde nachträglich in schriftlicher Form eingereicht worden ist.

bei der Behörde nachträglich in computerlesbarer Form eingereicht worden ist.

Die Erklärung, daß das nachträglich eingereichte schriftliche Sequenzprotokoll nicht über den Offenbarungsgehalt der internationalen Anmeldung im Anmeldezeitpunkt hinausgeht, wurde vorgelegt.

Die Erklärung, daß die in computerlesbarer Form erfaßten Informationen dem schriftlichen Sequenzprotokoll entsprechen, wurde vorgelegt.

2. **Bestimmte Ansprüche haben sich als nicht recherchierbar erwiesen** (siehe Feld I).

3. **Mangelnde Einheitlichkeit der Erfindung** (siehe Feld II).

4. Hinsichtlich der Bezeichnung der Erfindung

wird der vom Anmelder eingereichte Wortlaut genehmigt.

wurde der Wortlaut von der Behörde wie folgt festgesetzt:

5. Hinsichtlich der Zusammenfassung

wird der vom Anmelder eingereichte Wortlaut genehmigt.

wurde der Wortlaut nach Regel 38.2b) in der in Feld III angegebenen Fassung von der Behörde festgesetzt. Der Anmelder kann der Behörde innerhalb eines Monats nach dem Datum der Absendung dieses internationalen Recherchenberichts eine Stellungnahme vorlegen.

6. Folgende Abbildung der Zeichnungen ist mit der Zusammenfassung zu veröffentlichen: Abb. Nr. ---

wie vom Anmelder vorgeschlagen

weil der Anmelder selbst keine Abbildung vorgeschlagen hat.

weil diese Abbildung die Erfindung besser kennzeichnet.

keine der Abb.

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP 00/02782

A. KLASIFIZIERUNG DES ANMELDUNGSGELENSTANDES
IPK 7 C08F220/34 A01N33/12

Nach der Internationalen Patentklassifikation (IPK) oder nach der nationalen Klassifikation und der IPK

B. RECHERCHIERTE GEBIETE

Recherchierte Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
IPK 7 C08F

Recherchierte aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

WPI Data

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie ^o	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP 0 204 312 A (E.I. DU PONT DE NEMOURS AND CO.) 10. Dezember 1986 (1986-12-10) Ansprüche 1,4 ---	1-11
A	DE 196 46 965 A (RÖHM GMBH) 4. Juni 1998 (1998-06-04) ---	
A	EP 0 862 859 A (HÜLS AG) 9. September 1998 (1998-09-09) in der Anmeldung erwähnt Anspruch 1 ---	1
A	WO 91 12282 A (H.B. FULLER LICENSING & FINANCING INC.) 22. August 1991 (1991-08-22) -----	

Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

Siehe Anhang Patentfamilie

^o Besondere Kategorien von angegebenen Veröffentlichungen :	
^{"A"} Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist	^{"T"} Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist
^{"E"} älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist	^{"X"} Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erforderlicher Tätigkeit beruhend betrachtet werden
^{"L"} Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)	^{"Y"} Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erforderlicher Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist
^{"O"} Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht	^{"&"} Veröffentlichung, die Mitglied derselben Patentfamilie ist
^{"P"} Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist	

Datum des Abschlusses der internationalen Recherche

13. Juli 2000

Absendedatum des internationalen Recherchenberichts

02/08/2000

Name und Postanschrift der Internationalen Recherchenbehörde
Europäisches Patentamt, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Bevollmächtigter Bediensteter

Cauwenberg, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/02782

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
EP 204312	A	10-12-1986	US 4708870 A		24-11-1987
			AU 584427 B		25-05-1989
			AU 5809286 A		11-12-1986
			BR 8602524 A		27-01-1987
			CA 1271893 A		17-07-1990
			DE 3673244 D		13-09-1990
			DK 258486 A		04-12-1986
			IL 78979 A		29-04-1990
			IN 166373 A		21-04-1990
			JP 61282304 A		12-12-1986
			NO 862189 A		04-12-1986
			NZ 216359 A		29-08-1989
<hr/>			DE 19646965	A	04-06-1998
			DE 19654897 A		04-06-1998
			AU 5051498 A		03-06-1998
			WO 9821253 A		22-05-1998
			EP 0938511 A		01-09-1999
<hr/>			EP 862859	A	09-09-1998
			DE 19709076 A		10-09-1998
			CA 2231120 A		06-09-1998
			JP 10251340 A		22-09-1998
			NO 980980 A		07-09-1998
<hr/>			WO 9112282	A	22-08-1991
			NONE		

Translation

PATENT COOPERATION TREATY

PCT

9/926510

8

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference O.Z. 5449-WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/02782	-International filing date (day/month/year) 30 March 2000 (30.03.00)	Priority date (day/month/year) 12 May 1999 (12.05.99)
International Patent Classification (IPC) or national classification and IPC C08F 220/34, A01N 33/12		
Applicant CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND INNOVATION MBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 08 September 2000 (08.09.00)	Date of completion of this report 12 September 2001 (12.09.2001)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP00/02782

I. Basis of the report

1. With regard to the elements of the international application:*

 the international application as originally filed the description:pages 1,3-6,8-14, as originally filed

, filed with the demand

pages 2,7, filed with the letter of 23 May 2001 (23.05.2001) the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19)

, filed with the demand

pages 1-11, filed with the letter of 23 May 2001 (23.05.2001) the drawings:

pages _____, as originally filed

, filed with the demand

pages _____, filed with the letter of _____

 the sequence listing part of the description:

pages _____, as originally filed

, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages _____ the claims, Nos. _____ the drawings, sheets/fig _____5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- restricted the claims.
- paid additional fees.
- paid additional fees under protest.
- neither restricted nor paid additional fees.

2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- complied with.
- not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- all parts.
- the parts relating to claims Nos. _____

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/02782

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV

1.

The present invention lacks unity (PCT Rule 13). The following groups of subjects have been claimed:

- a. Claims 1-7: process for the preparation of antimicrobial polymers;
- b. Claims 11, 8 and 9: use 1 of the antimicrobial polymers;
- c. Claim 10: use 2 of the antimicrobial polymers.

These groups are not so linked as to form a single general inventive concept for the following reasons. The single general inventive concept linking the process and use(s) of groups a. to c. lies in the substance used in both cases, i.e. the antimicrobial polymers. However, protection can be simultaneously accorded to a process for the preparation of a substance and the use(s) of that substance under the same application only if the substance itself is also novel and inventive. That is not the case here (see comments under Box V).

The documents cited under Box V are adequate for the assessment of the novelty, inventive step and industrial applicability of all the claims, and no further searches are necessary (none of the present claims is novel). The applicant is not therefore being invited to pay additional fees (PCT Rule 68.1).

The objection concerning lack of unity will, however, be raised in the regional phase before the European Patent Office.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/02782

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	- / -	YES
	Claims	1-11	NO
Inventive step (IS)	Claims	- / -	YES
	Claims	1-11	NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims	- / -	NO

2. Citations and explanations

2.

This report makes reference to the following documents:

D1: EP-A-0 862 858

D2: EP-0 331 528.

D1 is mentioned in the present application, but neither document was cited in the international search report.

3.

The subject matter of Claims 1-11 is not novel (PCT Article 33(2)).

a. D1 discloses a copolymer with antimicrobial efficacy and a process for its production involving the polymerization of tert-butylaminoethyl acrylate (a secondary amine) and at least one further aliphatically unsaturated monomer. In this process, the secondary amine can be copolymerized with a plurality of other monomers (page 3, lines 11-49), for example acrylamides containing dialkylamino groups, that is to say, tertiary amines. The starting materials can be copolymerized either on a substrate, possibly in the presence of an initiator, or by radiation-induced grafting directly on a substrate surface (Examples 3 and 4). The polymers produced in this way are

used for antimicrobial coating in the sanitary ware and health sectors. They can also be used as finishes (cf. page 4, line 57 to page 5, line 6; and page 2, lines 34-36). The polymers produced in accordance with the process of the present application can be both homopolymers and copolymers according to the chosen definition in the claims. Copolymers are described in D1, which means that Claims 1-11 of the present application are not novel.

b. D2 additionally describes esters which contain tertiary amino groups and are used as antimicrobial substances. Reference Example 8 involves the polymerization of monomer mixes (see Table 1) containing both dimethylaminoethyl methacrylate (esters) and dialkylaminoalkyl acrylamides (both tertiary amines) as comonomers. The biocidal copolymers thus produced are used in, for example, nappies and coatings (page 7, lines 47-53). D2 therefore also discloses the subject matter of the present Claims 1-3, 8, 10 and 11.

4.

If amended claims which are novel over D1 and D2 are filed, the following points concerning the acknowledgement of inventive step will need to be noted.

According to the applicant, the problem addressed by the present application is to provide polymers with antimicrobial efficacy (page 2, lines 26-28). This is also the problem addressed by D1 (page 2, lines 56-58). In relation to D1, therefore, the present application evidently concerns a process for the preparation of other (alternative) polymers with antimicrobial efficacy. An inventive step can be acknowledged in such a case only if suitable evidence can be provided, e.g. by the submission

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 00/02782

of comparative examples, of a technical effect over the closest prior art (i.e. presumably D1), for example improved efficacy of the present compositions (see page 2, line 24). No such evidence has been found in the present application.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 00/02782

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

5.

Claim 3 of the present application is not clear (PCT Article 6). This is because of the use of the expression "for example", as a result of which the scope of the claim is not clearly defined.

This expression, together with the names of all the monomers to which it relates, should be deleted from the claim.

Translation

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference O.Z. 5449-WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/02782	-International filing date (day/month/year) 30 March 2000 (30.03.00)	Priority date (day/month/year) 12 May 1999 (12.05.99)
International Patent Classification (IPC) or national classification and IPC C08F 220/34, A01N 33/12		
Applicant CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND INNOVATION MBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 08 September 2000 (08.09.00)	Date of completion of this report 12 September 2001 (12.09.2001)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP00/02782

I. Basis of the report

1. With regard to the elements of the international application:*

 the international application as originally filed the description:

pages 1,3-6,8-14, as originally filed

pages , filed with the demand

pages 2,7, filed with the letter of 23 May 2001 (23.05.2001)

 the claims:

pages , as originally filed

pages , as amended (together with any statement under Article 19

pages , filed with the demand

pages 1-11, filed with the letter of 23 May 2001 (23.05.2001)

 the drawings:

pages , as originally filed

pages , filed with the demand

pages , filed with the letter of

 the sequence listing part of the description:

pages , as originally filed

pages , filed with the demand

pages , filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. The amendments have resulted in the cancellation of: the description, pages the claims, Nos. the drawings, sheets/fig5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP00/02782

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- restricted the claims.
- paid additional fees.
- paid additional fees under protest.
- neither restricted nor paid additional fees.

2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- complied with.
- not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- all parts.
- the parts relating to claims Nos. _____

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV

1.

The present invention lacks unity (PCT Rule 13). The following groups of subjects have been claimed:

- a. Claims 1-7: process for the preparation of antimicrobial polymers;
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